

A REVIEW OF THE *POLYRHACHIS CONTINUA* SPECIES-GROUP OF THE SUBGENUS *MYRMA* BILLBERG (HYMENOPTERA: FORMICIDAE: FORMICINAE) WITH KEYS AND DESCRIPTIONS OF NEW SPECIES

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Abstract

Sixteen species of the *Polyrhachis continua* species-group of the subgenus *Myrma* Billberg are presently recognised, including eight previously described: *Polyrhachis conops* Forel, *P. continua* Emery, *P. inusitata* Kohout, *P. procera* Emery, *P. sericeopubescens* Donisthorpe, *P. simpla* Santschi, *P. spinifera* Stitz and *P. stitzi* Santschi; and eight species described as new: *P. gazelle* sp. n., *P. manusensis* sp. n., *P. neuguinensis* sp. n., *P. planoculata* sp. n., *P. pulleni* sp. n., *P. robusta* sp. n., *P. sinuata* sp. n. and *P. tapini* sp. n. *Polyrhachis stitzi* Santschi, originally described by Karavaiev as *P. conops bismarckensis*, is raised to specific status and redescribed. The former subspecies and junior primary homonym *P. conops cuspidata* Stitz is considered a synonym of *P. sericeopubescens* Donisthorpe. A key to the species of the group is provided and all species are illustrated.

Introduction

The *Polyrhachis continua* species-group is a relatively small group of closely similar species within the subgenus *Myrma* Billberg. Species of the group were traditionally placed in the *P. relucens*-group (Emery 1925, Kohout 1989, Dorow 1995), until the *continua*-group was introduced by Kohout (1998). However, it was not until a decade later that Kohout (2008) provided basic characters distinguishing its constituents from other species of the subgenus as follows: 'The *continua*-group is characterised by an evenly convex mesosomal outline and the presence of postocular and lateral ridges on the head.' Historically, the *continua*-group species represent relatively recent additions to the composition of this subgenus.

It was more than a hundred years after Fabricius (1782) described *Formica militaris*, which later became the type species of the subgenus *Myrma*, that the first *continua*-group species, *P. continua* from Ternate and *P. continua procera* from New Guinea, were described by Emery (1887, 1897). These were closely followed by *P. conops*, described by Forel (1901) from the Bismarck Archipelago and the only species of the group described by this prolific author. In 1911, Stitz described *P. conops cuspidata* and *P. conops spinifera* from New Guinea; however, the former became a junior primary homonym of *P. cuspidatus*, described in 1857 by Fr. Smith, while the latter was also described by Emery (1911), as the synonym *P. continua hirsutula*. The next two additions to the group, *P. conops simplex* from Aru Island and *P. conops bismarckensis* from New Britain, were described by Karavaiev (1927), but both these names were already in use elsewhere in the genus. Santschi (1928), who realised Karavaiev's oversight, promptly renamed them in the following year, as *P. conops simpla* and *P. conops stitzi* respectively.

In 1941, Donisthorpe described *P. sericeopubescens* from Japen Island and, almost fifty years later, Kohout (1989) described *P. inusitata*, the only Australian species of the group. The present paper describes eight new species in the *continua*-group, five from the New Guinean mainland (*P. neuguinensis*, *P. planoculata*, *P. pulleni*, *P. robusta* and *P. tapini*) and three from the Bismarck Archipelago (*P. gazelle*, *P. sinuata* and *P. manusensis*), bringing the number of its constituents to sixteen.

Generally, species of the *continua*-group are uncommonly encountered in the field and consequently they are relatively poorly represented in most of the collections examined. As *continua*-group species are lignicolous, selecting various tree cavities or bamboo internodes as their nesting sites, they are often overlooked, or missed by the more common mass-collecting methods such as insecticidal fogging or pitfall traps. Also, their colonies appear to be relatively small, mostly well under 50 individuals, which means that only a small number of workers will be foraging at any one time. This may explain why one of the described species is known only from the original series (*P. conops*) and three of the newly described species (*P. gazelle*, *P. planoculata* and *P. sinuata*) are each known only from a single specimen.

Methods

Photographs of specimens were taken with a digital camera attached to a stereomicroscope and processed using Auto-Montage (Syncroscopy, Division of Synoptics Ltd, USA) and Adobe Photoshop CS2 (Adobe Systems Inc., USA). Images of *P. continua* Emery, *P. gazelle* sp. n., *P. inusitata* Kohout, *P. manusensis* sp. n., *P. neuguinensis* sp. n., *P. planoculata* sp. n., *P. pulleni* sp. n., *P. robusta* sp. n., *P. sinuata* sp. n. and *P. tapini* sp. n. are of the holotypes, while those of *P. conops* Forel, *P. procerca* Emery, *P. sericeopubescens* Donisthorpe, *P. simpla* Santschi and *P. spinifera* Stitz are of syntypes. Images of *P. stitzi* Santschi are of the voucher specimen selected from the additional series as discussed below under that species.

The use of the terms 'New Guinea', 'Bismarck Archipelago', 'New Britain' and 'New Ireland' alone indicate the biogeographic delimitation of these regions regardless of their current political boundaries. New Guinean localities at which ants were collected by the Bishop Museum's collectors were checked against that institution's locality list (BPBM 1966, unpublished). Their latitude and longitude co-ordinates and altitudes are only approximate.

Lists of synonymies presented here are not always comprehensive; for full synonymic citations see Dorow (1995), Bolton (1995) and Bolton *et al.* (2007). Publication dates and the spelling of species' and authors' names generally follow Bolton *et al.* (2007). The placement of *Myrma* Billberg, 1820 as a junior synonym of *Polyrhachis* Fr. Smith, 1857 follows a ruling of the ICZN (1999), which gave nomenclatural precedence to the latter genus.

Standard measurements (in mm) and indices follow those of Kohout (2008): TL = Total length (the necessarily composite measurement of the outstretched length of the entire ant measured in profile); HL = Head length (the maximum measurable length of the head in perfect full face view, measured from the anterior-most point of the clypeal border or teeth to the posterior-most point of the occipital margin); HW = Head width (width of the head in perfect full face view, measured immediately in front of the eyes); CI = Cephalic index ($HW \times 100/HL$); SL = Scape length (length of the antennal scape, excluding the condyle); SI = Scape index ($SL \times 100/HW$); PW = Pronotal width (width of the pronotal dorsum measured at the bases of the pronotal spines, or across the humeri in species without spines); MTL = Metathoracic tibial length (maximum measurable length of the tibia of the hind leg). All measurements were taken using a Zeiss (Oberkochen) SR stereomicroscope with an eyepiece graticule calibrated against a stage micrometer.

Abbreviations of common terms: c. = circa; Distr. = District; for. = forest; Mt = Mountain; Mts = Mountains; nr = near; Pen. = Peninsula; Pltn = Plantation; Prov. = Province; Ra. = Range; Riv. = river; rf. = rainforest; sclero. = open sclerophyll forest; Stn = Station; w = worker/s.

Abbreviations for institutions (with names of cooperating curators): ANIC – Australian National Insect Collection, Canberra, Australia (Dr S.O. Shattuck); BMNH – The Natural History Museum, London, UK (S. Ryder, Dale-Skey Papilloud); IZAS – Institute of Zoology, Ukrainian Academy of Sciences, Kiev, Ukraine (Dr A.G. Radchenko); MSNG – Civic Museum of Natural History ‘Giacomo Doria’, Genova, Italy (Dr R. Poggi); MCZC – Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA (Dr S.P. Cover); MHNG – Muséum d’Histoire Naturelle, Geneva, Switzerland (Dr B. Merz); MNHU – Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (Dr F. Koch); NMNH – National Museum of Natural History, Smithsonian Institution, Washington DC, USA (Dr T.R. Schultz); QMBA – Queensland Museum, Brisbane, Australia (Dr C.J. Burwell).

Systematics

Genus *Polyrhachis* Fr. Smith, 1857

Polyrhachis Fr. Smith, 1857: 58. Type species: *Formica bihamata* Drury, 1773, by original designation.

Subgenus *Myrma* Billberg, 1820

Myrma Billberg, 1820: 104. Type species: *Formica militaris* Fabricius, 1782: 493; by subsequent designation of Wheeler, 1911: 859.

Myrma Billberg; Wheeler, 1911: 859 (as genus and senior synonym of *Polyrhachis* Fr. Smith, 1857).

Myrma Billberg; Wheeler, 1922: 993 (as subgenus of *Polyrhachis* Fr. Smith, 1857).

(For full reference citations with synonymy see Dorow *et al.* 1997).

Polyrhachis continua species-group

Characters of the P. continua species-group

Worker. Medium-sized to relatively large ants (HL > 2.30) with general characteristics of the genus and subgenus. Head with sides in front of eyes subparallel or weakly convex towards mandibular bases; sides in most species distinctly wider behind the eyes with postocular and lateral ridges extending on each side towards occipital corners. Eyes usually large, situated well back, giving face a characteristic elongated appearance; in some species eyes distinctly posteriorly protracted (e.g. *P. conops* Forel), or posteriorly truncate (*P. sinuata*); however, in one species (*P. planoculata*) eyes virtually flat, not reaching cephalic outline in full face view. Antennal scapes relatively long (SL > 180). Mesosoma in profile with evenly convex outline, in most species without distinct border between propodeal dorsum and declivity. Sculpture of head and mesosoma ranging from rather finely and uniformly reticulate-punctate (as in *P. inusitata* Kohout and *P. tapini*), to distinctly longitudinally striate (as in *P. conops* and *P. manusensis*), with gaster finely shagreened. Appressed pubescence virtually lacking from most parts of body in all species, except for a very fine, diluted, reddish-brown patch on gastral dorsum. Dorsal surfaces of mesosoma and petiole almost completely hairless (as in *P. continua* Emery), or with rather short, erect hairs (as in *P. spinifera* Stitz or *P. manusensis*); head and apex of gaster in most species with several short or medium length, erect or posteriorly inclined, hairs. Colour of all species is virtually black throughout with somewhat semiopaque shine; appendages black or dark reddish brown.

Queen. Apart from distinctly larger size and usual sexual characters, including three ocelli and fully developed mesosoma with wings, very similar to worker.

Male. Males of only a few species are known and as such, their treatment has not been attempted here.

Within the group the species clearly polarise into two complexes, centring on *P. continua* and *P. conops*. The *continua*-complex includes species with the petiole distinctly higher than wide and armed with rather elongated dorsal spines and usually very short or rudimentary lateral teeth (Fig. 45). The *conops*-complex includes species characterised by a petiolar node that is only marginally higher than wide and armed with short dorsal spines that are barely longer than their basal width and well developed and acute lateral teeth (Fig. 2) (except in *P. gazelle* sp. n.). The complexes are also clearly divided geographically. The *continua*-complex is distributed throughout mainland New Guinea, extending westwards to Indonesia and southwards to Cape York Peninsula in Queensland, while distribution of species of the *conops*-complex appears to be limited to the islands of the Bismarck Archipelago.

Distribution and biology. The *continua*-group comprises mostly Melanesian elements with its known distribution extending from Sulawesi and the Moluccas (Ternate I.), across New Guinea to the Bismarck Archipelago, including New Britain, New Ireland and Manus Island, and south to Cape York Peninsula in Queensland. However, the group is predominantly New Guinean, where it is most diverse, both in the number of species and morphologically. Members of the *continua*-group are lignicolous, using various tree cavities, including rotten logs or hollow internodes of dry bamboo stems for their nesting sites. Only one species (*P. tapini*) was recorded nesting in soil in the ground (Taylor, specimen label data).

Key to workers of the *P. continua* species-group

- 1 Petiolar node with dorsal spines short, tooth-like, barely longer than their basal width (Fig. 2); lateral petiolar spines distinct, acute (except in *P. gazelle* sp. n.); eyes more-or-less protracted or truncate posteriorly (Bismarck Archipelago) (*conops*-complex) 2
- Node of petiole with dorsal spines elongated (Fig. 45); lateral petiolar spines very short or rudimentary; eyes more-or-less normal (New Guinea, Indonesia, Australia) (*continua*-complex) 6
- 2 Antennal scapes with numerous short hairs along leading edges 3
- Antennal scapes without hairs 5
- 3 Dorsum of mesosoma and basal gastral tergite without hairs; eyes distinctly protracted posteriorly (Figs 1, 4) (New Britain) *conops* Forel
- Dorsum of mesosoma and gaster with numerous erect hairs; eyes more-or-less normal or posteriorly truncate 4
- 4 Petiolar node, including spines, with numerous short, erect hairs around base and along lateral margins; dorsum of mesosoma distinctly longitudinally striate; eyes convex, more-or-less normal (Figs 8, 12) (Manus I.) *manusensis* sp. n.
- Petiolar node without hairs; dorsum of mesosoma only finely longitudinally striate; eyes rather flat, posteriorly truncate (Figs 9, 14) (New Ireland) *sinuata* sp. n.
- 5 Petiolar node relatively wide with lateral spines well developed; eyes distinctly protracted posteriorly (Figs 10, 15) (New Britain) *stitzi* Santschi
- Petiolar node relatively narrow with lateral spines reduced to blunt angles; eyes more-or-less normal, not protracted posteriorly (Fig. 3) (New Britain) *gazelle* sp. n.
- 6 Eyes flat, in full face view not reaching lateral cephalic outline (Figs 26, 29) *planoculata* sp. n.
- Eyes convex, in full face view clearly breaking lateral cephalic outline (e.g. Figs 17, 18, 19) 7

- 7 Antennal scapes without hairs or occasionally with only a few hairs present along leading edge 8
- Antennal scapes with numerous short to medium length hairs along leading edge and fewer hairs along inferior edge 10
- 8 Lateral margins of mesonotal dorsum converging posteriorly; pronotal spines relatively short, broadly based, only about 2x as long as basal width; lateral petiolar spines reduced to small acute teeth
..... *continua* Emery
- Lateral margins of mesonotal dorsum converging anteriorly or subparallel; pronotal spines relatively long and slender, distinctly longer than 2x basal width; lateral petiolar spines blunt or obsolete 9
- 9 Dorsal petiolar spines relatively short, subparallel; lateral margins of pronotal and mesonotal dorsa virtually flat; dorsum of gaster with only a few rather short hairs *procera* Emery
- Dorsal petiolar spines rather long, divergent; lateral margins of pronotal and mesonotal dorsa narrowly, but distinctly upturned; dorsum of gaster with numerous, medium length hairs *tapini* sp. n.
- 10 Lateral petiolar spines obsolete; dorsum of mesosoma finely reticulate-punctate (Australia, Cape York Pen.) *inusitata* Kohout
- Lateral petiolar spines produced into small, but distinct, acute teeth; dorsum of mesosoma more-or-less regularly, longitudinally striate (New Guinea) 11
- 11 Propodeal teeth upturned, acute (Figs 25, 34, 39); propodeum with more-or-less distinct, blunt, transverse carina partly dividing dorsum from declivity; petiolar node, including spines, with numerous short, erect hairs around base and along lateral margins 12
- Propodeal teeth virtually lacking (Figs 43, 48, 50); propodeal dorsum descending into declivity in medially uninterrupted line; petiolar node without hairs, except a fringe of very short hairs along base and subpetiolar process 14
- 12 Smaller (HL < 2.60), more slender species..... *neuguinensis* sp. n.
- Larger (HL > 2.90), broader species 13
- 13 Pronotal spines long and slender, almost 3x as long as basal width; clypeus in profile only weakly sinuate; antennal scapes generally longer (SI 185-199) *robusta* sp. n.
- Pronotal spines shorter, broadly based, only about 2x as long as basal width; clypeus in profile distinctly sinuate; antennal scapes generally shorter (SI 179-188) *pulleni* sp. n.
- 14 Lateral margins of mesonotal dorsum distinctly converging posteriorly; pronotal dorsum with lateral margins flat *simpla* Santschi

- Lateral margins of mesonotal dorsum subparallel; pronotal dorsum with lateral margins upturned 15
- 15 Larger species (HL > 2.80); pronotal dorsum markedly wide, about 1.5x wider than long; pronotal spines with broad, more-or-less dorsally flattened bases *spinifera* Stitz
- Smaller species (HL < 2.70); pronotal dorsum narrower, only about 1.13x wider than long; pronotal spines slender with dorso-medially flattened bases *sericeopubescens* Donisthorpe

Polyrhachis conops-complex

***Polyrhachis conops* Forel, 1901**

(Figs 1-2, 4-5)

Polyrhachis conops Forel, 1901: 28. Syntype workers, queens, males. Type locality: BISMARCK ARCHIPELAGO [NEW BRITAIN], Herbertshöhe (F. Dahl), MNHU, MHNG (examined).

Dimensions of syntypes (queens cited last): TL c. 9.93-11.18, 11.94-12.65; HL 2.43-2.67, 2.72-2.82; HW 1.89-2.09, 2.17-2.22; CI 77-79, 79-80; SL 3.17-3.43, 3.48-3.53; SI 162-168, 159-160; PW 1.71-1.86, 2.52-2.57; MTL 3.33-3.58, 3.63-3.68 (5+2 measured).

Remarks. The syntypes of *P. conops* are the only specimens known of this species. It stands between *P. continua* Emery and *P. manusensis* sp. n., featuring the slender and elegant stature of the former and the petiolar armament of the latter. Several specimens of the type series show a mild tendency of the eyes changing their shape from posteriorly protracted to almost normal. The eyes are usually distinctly protracted posteriorly (Figs 1, 4); however, in several specimens examined this character appears to be less prominent, with the eyes almost normal. This character is not uncommon in the subgenus *Myrma*, with several taxa described solely on the presence or lack of the posteriorly protracted eyes, such as in *P. nigropilosa conophthalma* Emery, 1900, or *P. striatorugosa exophthalma* Forel, 1913.

***Polyrhachis gazelle* sp. n.**

(Figs 3, 6-7)

Type. *Holotype* worker: PAPUA NEW GUINEA, New Britain Prov., Gazelle Pen., Mt Sinewit, 04°38'S, 151°58'E, c. 900 m, 5-9.xi.1962, J. Sedláček (QMT 174960), in QMBA.

Description. Worker. Dimensions: TL c. 11.34; HL 2.72; HW 2.02; CI 74; SL 3.88; SI 192; PW 1.71; MTL 4.03.

Anterior clypeal margin arcuate; clypeus with poorly indicated, blunt, median carina; clypeus weakly sinuate in profile, posteriorly rounding into shallow basal margin. Frontal triangle distinctly impressed. Frontal carinae sinuate, closely approximate anteriorly with acute, almost vertically raised margins; central area relatively narrow

with rather flat frontal furrow. Sides of head in front of eyes diverging anteriorly in weakly convex line before rounding into mandibular bases; behind eyes, sides forming a blunt carina extending towards rather prominent occipital corners. Eyes convex, in full face view exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum with long, slender, acute spines that are directed anterolaterally and curve slightly downwards, following lateral outline of mesosomal dorsum; lateral edges of spines acute and continuous with parallel margins of pronotum. Promesonotal suture distinctly impressed laterally; mesonotal dorsum transverse with weakly raised anterior corners; lateral margins shallowly emarginate at midlength before converging into medially flat metanotal groove. Propodeal dorsum with lateral margins subparallel, terminating posteriorly in rather indistinct, minute teeth; dorsum descending into declivity in medially uninterrupted line. Petiole scale-like, only marginally higher than wide, with anterior and posterior faces converging dorsally in virtually straight line; dorsal margin armed with two wide-based and tooth-like, acute spines, with inner margins continuous medially, forming 'U'-shaped dorsum of segment; lateral margin of petiole below base of each spine with angular prominence. Anterior face of first gastral segment flat with anterodorsal margin widely rounding onto dorsum of gaster.

Mandibles distinctly longitudinally striate with piliferous pits. Clypeus reticulate-punctate; sides of head obliquely, vertex mostly longitudinally, striate. Sculpturation on pronotal dorsum finely reticulate-punctate anteriorly, with reticulae more longitudinally organised towards promesonotal suture. Mesonotal and propodeal dorsa more distinctly longitudinally striate; sides of mesosoma and propodeal declivity reticulate-punctate. Petiole and gaster shagreened.

Mandibles along outer margins and masticatory borders with numerous semierect, golden hairs. Anterior clypeal margin with a few longer setae medially and several shorter setae fringing margin laterally. Several pairs of medium length, golden hairs on clypeus, along frontal carinae and single pair of longer, anteriorly inclined hairs on vertex; no hairs lining lateral cephalic outline in full face view. Antennal scapes, mesosoma, petiole, legs and gaster without hairs, except a few hairs on gastral venter and apex. Whitish, closely appressed pubescence rather scarcely distributed on most dorsal surfaces, more abundant with distinctly reddish tint on gastral dorsum.

Colour. Black; narrow band behind mandibular masticatory border, apical funicular segments, legs, including mid and hind coxae, and gaster medium reddish brown.

Sexuals and immature stages unknown.

Etymology. Named after the type locality, Gazelle Peninsula on New Britain, Bismarck Archipelago.

Remarks. The holotype is the only specimen known of this species. It was collected at Mt Sinewit by the late Josef Sedláček, a former field worker and a long-time associate of the Bernice P. Bishop Museum, Honolulu, Hawai'i. With rudimentary lateral petiolar teeth and more-or-less normally shaped eyes, *P. gazelle* appears to represent an intermediate form between the *P. conops* and *P. continua* complexes.



Figs 1-7. *Polyrhachis* spp. (1-2, 4-5) *P. conops* Emery (syntype): (1) head in full face view; (2) petiole in frontal view; (4) dorsal view; (5) lateral view. (3, 6-7) *P. gazelle* sp. n. (holotype): (3) head in full face view; (6) dorsal view; (7) lateral view. Not to scale.

***Polyrhachis manusensis* sp. n.**

(Figs 8, 11-12)

Types. *Holotype* worker: PAPUA NEW GUINEA, Manus Island Prov., c. 8-10 km WSW of Lorengau, 02°04'S, 147°12'E, 150-200 m, 27-28.vii.1984, rf., ex nest in tree trunk crevice, R.J. Kohout acc. 84.135 (worker). *Paratypes*: data as for holotype (56 workers). Holotype and 4 paratypes in ANIC; most paratypes in QMBA; 2 paratypes each in AMNH, BMNH, CASC, MCZC, MHNG, MNHU and NMNH.

Additional material examined. PAPUA NEW GUINEA: Manus Island Prov., (same data as for holotype, only RJK acc. 84.138) (w); ditto, ex nest in dry bamboo internode (RJK acc. 84.144) (w).

Description. Worker. Dimensions (holotype cited first): TL c. 10.84, 9.68-11.34; HL 2.64, 2.34-2.68; HW 2.00, 1.78-2.06; CI 76, 74-78; SL 3.48, 3.22-3.53; SI 174, 169-181; PW 2.15, 1.87-2.18; MTL 3.58, 3.22-3.73 (14 measured).

Anterior clypeal margin arcuate, medially obtusely truncate. Clypeus with poorly defined, blunt median carina; clypeus virtually straight in profile with rather flat basal margin. Frontal triangle distinct. Frontal carinae sinuate with moderately raised margins; central area with poorly defined frontal furrow. Sides of head in front of eyes weakly concave towards mandibular bases; behind eyes, sides produced into blunt carina extending towards rather prominent occipital corners. Eyes mildly protracted posteriorly; in full face view clearly exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum distinctly wider than long with relatively short, broad-based, acute spines directed anterolaterally and curved slightly downwards; lateral edges of spines acute and continuous with weakly upturned pronotal margins. Promesonotal suture distinctly impressed; mesonotal dorsum strongly transverse, with moderately raised lateral margins; metanotal groove deeply impressed laterally, rather flat and posteriorly bowed medially. Propodeal dorsum with lateral margins strongly raised anteriorly, virtually flat posteriorly, terminating in blunt propodeal teeth, lateral borders of teeth continuous posteriorly and somewhat curved inwards into declivity. Petiole scale-like, dorsal margin armed with two, broad-based, acute spines with inner margins forming 'U'-shaped dorsum of segment; lateral margin of petiole below base of each spine with distinct, acute tooth. Anterior face of first gastral segment flat with anterodorsal margin widely rounding onto dorsum of gaster.

Mandibles distinctly, longitudinally striate with numerous piliferous pits towards masticatory borders. Clypeus reticulate-punctate with rest of head and mesosoma, including sides, distinctly, mostly longitudinally striate; propodeal declivity and petiole, including spines, finely reticulate-punctate. Gaster finely reticulate-punctate with sculpture on dorsum somewhat longitudinally striate.

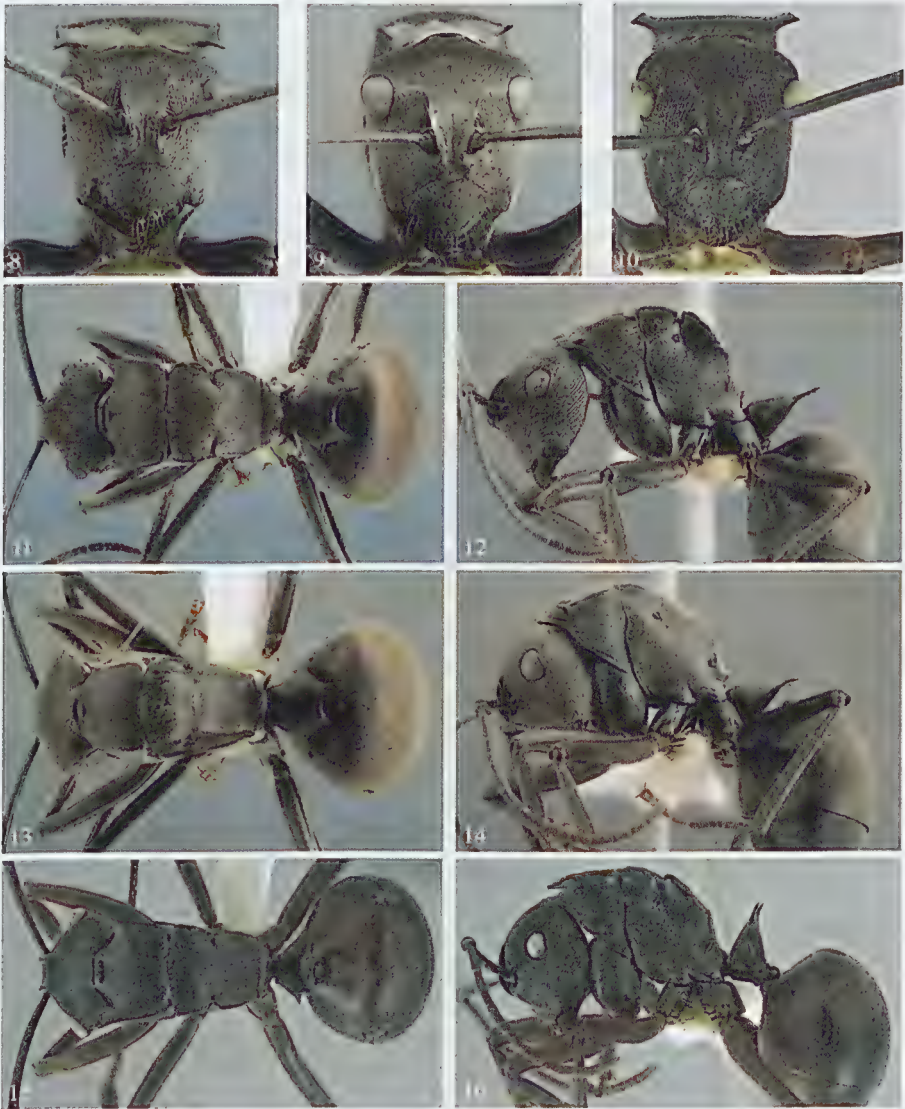
Mandibular masticatory borders and outer margins with numerous, semierect, golden hairs. Anterior clypeal margin medially with several long, anteriorly directed, golden setae with distinct reddish tint and fringe of shorter setae laterally. Numerous short to medium length, erect to semierect hairs on clypeus, along frontal carinae and vertex, many hairs fringing lateral cephalic outline in full face view. Antennal scapes with several semierect, short to medium length hairs along leading edge and a few hairs along inferior edge towards apices. Mesosoma, except declivity, and legs, except dorsal surfaces of femora, with numerous short to medium length, erect hairs; petiole with numerous shorter hairs along lateral margins near base and a few occasional hairs on dorsal spines. Gaster with numerous medium length, posteriorly inclined hairs, increasing in length towards gastral apex. Closely appressed, silvery white or greyish pubescence variously distributed over most body surfaces, somewhat shorter with distinctly reddish tint on gastral dorsum.

Colour. Black; mandibular teeth and apical funicular segments reddish brown. Legs dark to very dark reddish brown; tarsi mostly black. Gaster black, apex and venter dark reddish brown.

Sexuals and immature stages unknown.

Etymology. Named after Manus Island in the Bismarck Archipelago.

Remarks. *Polyrhachis manusensis* is characterised by its distinctly striate head and rather broad, longitudinally striate dorsum of mesosoma, which has short, broadly based pronotal spines. It is evidently endemic to Manus Island.



Figs 8-16. *Polyrhachis* spp. (8, 11-12) *P. manusensis* sp. n. (holotype): (8) head in full face view; (11) dorsal view; (12) lateral view. (9, 13-14) *P. sinuata* sp. n. (holotype): (9) head in full face view; (13) dorsal view; (14) lateral view. (10, 15-16) *P. stitzi* (voucher specimen): (10) head in full face view; (15) dorsal view; (16) lateral view. Not to scale.

***Polyrhachis sinuata* sp. n.**

(Figs 9, 13-14)

Type. Holotype worker: PAPUA NEW GUINEA, New Ireland Prov., Lelet Plateau, c. 03°20'S, 151°51'E, c. 950 m, 19-21.vii.1984, R.J. Kohout acc. 84.92 (worker), in ANIC.

Description. Worker. Dimensions: TL c. 10.84; HL 2.65; HW 2.09; CI 79; SL 3.63; SI 174; PW 1.53; MTL 3.73.

Anterior clypeal margin arcuate. Clypeus without distinct median carina; virtually straight in profile with shallow basal margin. Frontal triangle distinct. Frontal carinae sinuate with only moderately raised margins anteriorly, flat posteriorly; central area flat with indistinct frontal furrow. Sides of head in front of eyes straight towards mandibular bases; behind eyes sides produced into blunt carina extending towards occipital corners. Eyes rather flat, notably when viewed from above, with posterior blinkers, in full face view eyes marginally exceeding lateral cephalic outline. Ocelli lacking; position of median ocellus indicated by distinct pit in cephalic sculpturation. Pronotum armed with very short, slender, anterolaterally and dorsally directed spines with lateral edges continuous with pronotal margins in convex line towards promesonotal suture. Dorsum of mesosoma convex, only marginally wider than long; lateral margins only narrowly and weakly raised anteriorly, converging posteriorly into distinct metanotal groove. Propodeal dorsum in profile forming single convex line with declivity; lateral margins only weakly converging posteriorly in dorsal view, terminating in weakly raised, blunt tuberculae. Petiole, including spines, as wide as high; dorsal spines relatively short and slender; lateral teeth short. Anterior face of first gastral segment flat, marginally higher than full height of petiole.

Mandibles distinctly, longitudinally striate with numerous piliferous pits towards masticatory borders. Clypeus reticulate-punctate with rest of head and sides mostly longitudinally striate. Dorsum of mesosoma finely, more-or-less regularly, longitudinally striate; sides of mesosoma reticulate-punctate with sculpture organised into somewhat irregular striations. Petiole very finely reticulate-punctate. Gaster reticulate-punctate with sculpture on dorsum somewhat longitudinally striate.

Colour. Black; mandibular teeth dark reddish brown, narrow reddish band along masticatory border. Apical funicular segments and legs very dark reddish brown; tarsi mostly black. Gaster black, apex and venter dark reddish brown.

Sexuals and immature stages unknown.

Etymology. Named for the somewhat sinuate outline of the mesosoma in dorsal view.

Remarks. *Polyrhachis sinuata* is a very distinct species featuring very short and slender pronotal spines and a finely, somewhat longitudinally, reticulate-striate mesosomal dorsum. Also, the shape of the eyes differs from other species of the *continua*-group in being flat with posterior blinkers, quite similar to those in species of subgenus *Hemioptica* Roger (see Dorow and Kohout 1995) or *P. aculeata*-group species of the subgenus *Myrma*

(manuscript in preparation). The unique holotype was collected foraging on low vegetation in open woodland along a walking track and, in spite of a subsequent search, no other specimens were found. *Polyrhachis sinuata* appears to be a rare species endemic to higher elevations along the summit of Lelet Plateau on New Ireland.

Polyrhachis stitzi Santschi, 1928

(Figs 10, 15-16)

Polyrhachis (Myrma) conops var. *bismarckensis* Karavaiev, 1927: 46. Holotype worker. Type locality: BISMARCK ARCHIPELAGO, ?MNHU, ?IZAS (location of type unknown). Junior primary homonym of *P. mucronata bismarckensis* Forel, 1901: 33).

Polyrhachis (Myrma) conops var. *stitzi* Santschi, 1928: 139. Replacement name.

Polyrhachis (Myrma) conops var. *stitzi* Santschi; Kohout, 1998: 519. Junior synonym of *P. conops* Forel, 1901. Spurious synonymy.

The holotype of *P. conops stitzi* cannot be found in the Karavaiev collection (IZAS) or in the Stitz collection (MNHU) and appears to have been lost. However, during one of my visits to the Zoological Museum of Humboldt University in Berlin, that houses the bulk of the Stitz collection, I located a small bottle containing five unidentified *Polyrhachis* specimens labelled 'Ralum Dahl'. The series included 2 workers and 3 alate queens, all callows in various stages of pigmentation, with both workers and two queens in a sound condition for dry mounting. Their subsequent comparison with *P. conops* types, together with Karavaiev's brief description, supports my opinion that these specimens actually represent *P. conops stitzi*. Considering that the holotype was also a callow specimen ('The segments of the gaster, from third on, dark yellowish-brown'), it seems reasonable to conclude that these specimens are part of the original series from which Stitz sent a single worker specimen to Karavaiev (1927: 46), who diagnosed it as follows:

'*Polyrhachis (Myrma) conops* For. var. *bismarckensis* nova. (worker character). Clypeus ganz wie bei subsp. simplex, ohne Ausschnitt beiderseits des geradlinig abgestutzten Vorterrandes. Augen eiförmig, vorn breiter, konvex, schief gestellt, das spitzere Hinterende etwas sackförmig nach hinten hervorragend. Petiolusschuppe wie beim Arttypus. Gastersegmente, vom dritten an, dunkel ockerfarben. Bismarckarchipel, ein (worker character), von H. Stitz. Berliner Zool. Museum, erhalten.'

Redescription. Worker. Dimensions: TL c. 9.63-10.63; HL 2.62-2.74; HW 2.03-2.15; CI 77-78; SL 3.43-3.53; SI 164-169; PW 1.91-2.02; MTL 3.58-3.78 (2 measured).

Anterior clypeal margin arcuate, narrowly medially truncate. Clypeus with blunt, rather indistinct median carina, virtually straight in profile with shallow depression anteriorly and weakly impressed basal margin. Frontal triangle distinct. Frontal carinae sinuate with margins only moderately raised; central area flat with poorly indicated frontal furrow. Sides of head in front of eyes straight, weakly converging

towards mandibular bases; behind eyes sides produced into blunt carina extending towards rather prominent occipital corners. Eyes convex, distinctly protracted posteriorly; in full face view clearly exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum wider than long with relatively short, broad-based, acute spines that are anterolaterally directed, somewhat dorsomedially flattened and curve slightly downwards; lateral edges of spines acute and continuous with weakly upturned margins of pronotum. Promesonotal suture distinctly impressed laterally, rather flat medially; mesonotal dorsum transverse with only weakly raised lateral margins, converging into medially flat, metanotal groove. Propodeal dorsum with lateral margins raised anteriorly, virtually flat posteriorly and terminating in distinct, minute teeth with inner borders continuous medially for short distance and terminating in blunt, rather indistinct, transverse carina that somewhat divides dorsum from declivity. Petiole scale-like, dorsal margin armed with two broad-based, tooth-like spines with inner margins forming widely open, 'U'-shaped dorsum of segment with indication of rudimentary intercalary tooth; lateral margin of petiole below base of each spine with distinct, acute tooth. Anterior face of first gastral segment flat, with anterodorsal margin rather narrowly rounding onto dorsum.

Mandibles distinctly, longitudinally striate. Clypeus reticulate-punctate with rest of head and mesosoma, including sides, distinctly, rather regularly, longitudinally striate; propodeal declivity and petiole, including spines, finely reticulate-punctate. Gaster shagreened.

Mandibular masticatory borders and outer margins with numerous semierect, golden hairs. Anterior clypeal margin medially with several medium length, anteriorly directed, golden setae and fringe of shorter setae laterally. Numerous short to medium length, erect to semierect hairs on clypeus, along frontal carinae and sides of head; number of hairs decreasing posteriorly with only a few shorter hairs on vertex. Antennal scapes, mesosoma, petiole and legs without hairs. Gaster with only a few, rather short, posteriorly inclined hairs, scattered towards apex and venter. Closely appressed, very short, white or greyish pubescence variously distributed over most body surfaces, including dorsum of gaster.

Colour. Black; mandibular masticatory borders lined reddish brown; antennae with funicular segments progressively lighter, yellowish brown towards apices. Legs, including mid and hind coxae, medium reddish brown; front coxae and tarsi shade darker. Gaster reddish brown.

Queen (not previously described). Dimensions: TL c. 11.54-11.89; HL 2.62-2.71; HW 1.95-2.09; CI 74-77; SL 3.33-3.38; SI 162-171; PW 2.37-2.40; MTL 3.48-3.53 (2 measured).

Queen larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines distinctly shorter, broad-based. Mesoscutum only marginally wider than long; lateral margins strongly converging anteriorly into narrowly rounded anterior margin; median line distinct; parapsides virtually flat; mesoscutum in profile with relatively low, widely rounded anterior face and only slightly convex dorsum. Mesoscutellum only weakly convex, not distinctly elevated above dorsal plane of mesosoma. Propodeum convex in outline with lateral margins terminating in medially directed, short ridges and blunt border

dividing propodeal dorsum from declivity. Petiole with dorsal spines distinctly shorter and wider at bases; dorsum with distinct intercalary tooth. Dorsum of mesoscutum with several short, erect hairs and a few marginally longer hairs on dorsum of mesoscutellum. Sculpturation, pubescence and colour very similar to worker.

Male and immature stages unknown.

Remarks. *Polyrhachis stitzi* stands relatively close to *P. conops* and I previously considered them conspecific (Kohout 1998: 519). However, after subsequent examination and direct comparison, I now believe they represent separate biological species. *Polyrhachis conops* is distinctly more slender with the leading edge of the antennae featuring numerous short hairs that are completely lacking in *P. stitzi*.

Polyrhachis continua-complex
***Polyrhachis continua* Emery, 1887**
(Figs 17, 20-21)

Polyrhachis continua Emery, 1887: 235, pl. 4, fig. 21. Holotype worker. Type locality: INDONESIA, Ternate I., Aqoi Conora (O. Beccari), MSNG (examined).

Polyrhachis continua var. *revocata* Viehmeyer, 1913: 151. Syntype workers. Type locality: INDONESIA, SULAWESI (in copal), MNHU (examined). Synonymy by Kohout, 1998: 519.

Additional material examined. NEW GUINEA SE: Paumomu Riv. (= Angabanga Riv.), ix-xii.1892 (L. Loria) (w) [specimens in the Emery collection (MSNG) erroneously labelled as syntypes]. NEW GUINEA: Bulolo, 2300', 12.xii.1967, rf. (B.B. Lowery) (w). PAPUA: N. Distr., Managalese area, viii.1965 (R. Pullen) (w); Middle Moorhead Riv., c. 08°50'S, 141°30'E, viii.1965, dry sclero. (R. Pullen) (w). PAPUA NEW GUINEA: Northern Prov., Owen Stanley Ra., nr Mamba Pltn, c. 7 km WNW of Kokoda, 08°51'S, 147°41'E, 500 m, 31.viii-1.ix.1984 (RJK acc. 84.403) (w, ♀).

Worker. Dimensions (holotype cited first): TL c. 10.18, 9.42-10.68; HL 2.50, 2.31-2.59; HW 1.81, 1.65-1.87; CI 72, 70-74; SL 3.48, 3.12-3.48; SI 192, 181-192; PW 1.53, 1.53-1.87; MTL 3.68, 3.22-3.68 (1+10 measured).

Queen (not previously described). Dimensions: TL c. 11.04-11.29; HL 2.62-2.68; HW 2.09-2.12; CI 79-80; SL 3.38-3.43; SI 162; PW 2.37-2.40; MTL 3.33-3.48 (2 measured).

Queen larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines distinctly shorter, only about 2x as long as basal width. Mesoscutum wider than long; lateral margins converging anteriorly into narrowly rounded anterior margin; median line distinct; parapsides virtually flat anteriorly, weakly raised posteriorly; mesoscutum in profile with relatively low anterior face rounding onto weakly convex dorsum. Mesoscutellum only weakly convex, not elevated above dorsal plane of mesosoma. Propodeum with lateral margins terminating in medially directed, short ridges; propodeal dorsum descending into steeply descending declivity in medially uninterrupted line. Petiole with dorsal spines distinctly shorter, inner margins forming

'U'-shaped dorsum of segment. Sculpturation, pilosity, pubescence and colour scheme very similar to worker.

Male and immature stages unknown.

Remarks. Direct comparison of the *continua* holotype and *continua revocata* syntype has shown they are very similar. The clypeus is almost straight with only a shallow depression at the anterior margin, which is distinctly medially truncate. The frontal carinae are markedly closely approximate, leaving the central area rather narrow, only scarcely widening posteriorly towards the vertex. However, in *P. continua*, the somewhat flattened pronotal spines are shorter, less divergent and minutely emarginated at their bases, while in *P. continua revocata* the dorsolateral borders of the spines merge with the pronotal margins in an uninterrupted line. The petiolar spines of *P. continua revocata* are also slightly longer than in *P. continua*. The head and mesosoma in *P. continua* is very finely, more or less regularly, striate-punctate, while the sculpturation in *P. continua revocata* is somewhat more distinct and more regular. However, when the types of both are compared with additional material from New Guinea, it becomes apparent that the characters separating these forms fall well within the limits of variability of a single species.

Polyrhachis inusitata Kohout, 1989

(Figs 18, 22-23)

Polyrhachis inusitata Kohout, 1989: 513. Holotype and paratype worker. Type locality: AUSTRALIA, QUEENSLAND, Cape York Pen., West Claudie R., Iron Range area, 12°44'S, 143°14'E, 3-10.xii.1985 (G.B. Monteith & D. Cook) QMBA, ANIC.

Polyrhachis inusitata Kohout, 1998: 520. Junior synonym of *P. sericeopubescens* Donisthorpe, 1941: 61. Erroneous synonymy.

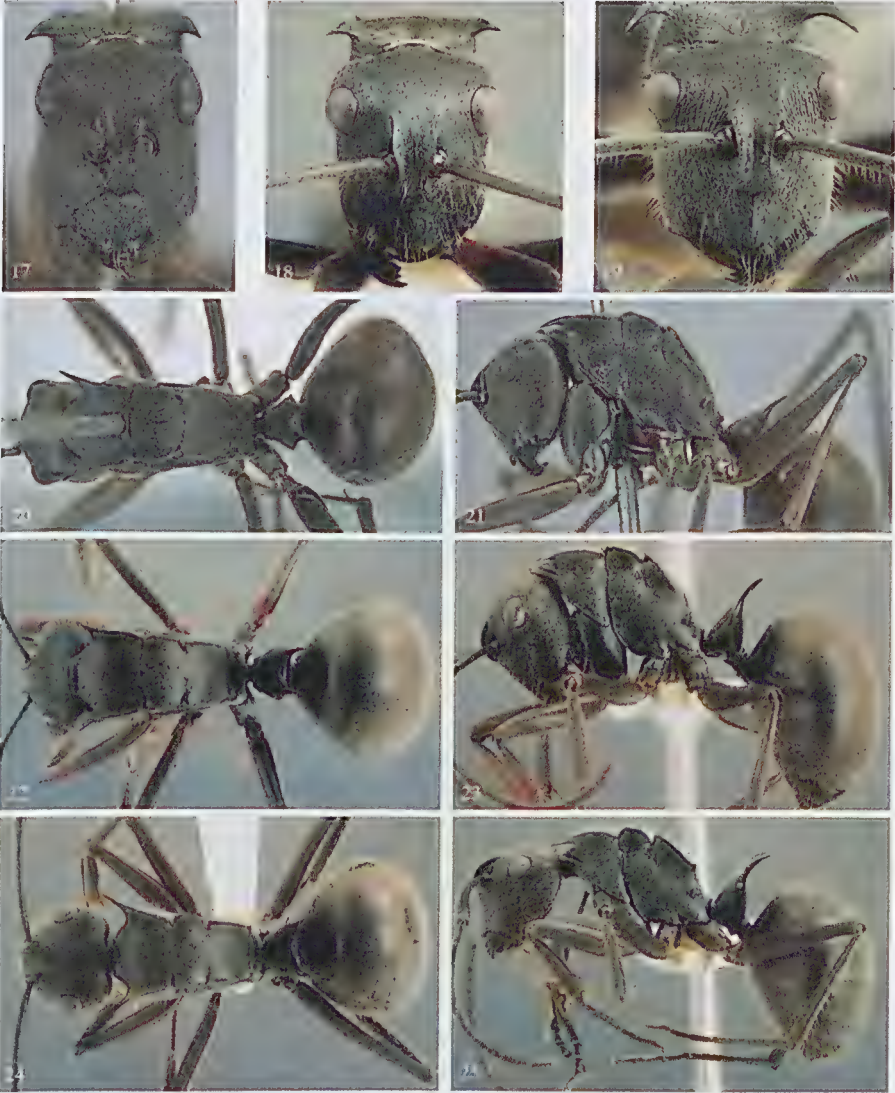
Polyrhachis inusitata Kohout; Kohout, 2012: 39. Status reversal.

Additional material examined. QUEENSLAND: McIlwraith Ra., Leo Creek Road, c. 13°44'S, 143°19'E, 10-20.vii.1976 (P. Filewood) (paratype worker); Cape York Pen., 6 km ENE of Mt Tozer, 12°44'S, 143°16'E, 30.vi.1986 (T. Weir & A. Calder) (w); McIlwraith Ra., 11 km WbyN of Bald Hill, 13°44'S, 143°20'E, 26.vi-13.vii.1989, 500 m (I.D. Naumann) (w).

Worker. Dimensions (holotype cited first): TL c. 10.53, 9.38-10.53; HL 2.56, 2.31-2.56; HW 1.87, 1.72-1.87; CI 73, 74; SL 3.53, 3.30-3.53; SI 189, 192-199; PW 1.61, 1.36-1.61; MTL 3.56, 3.38-3.58 (1+3 measured).

Sexuals and immature stages unknown.

Remarks. *Polyrhachis inusitata* closely resembles *P. sericeopubescens* Donisthorpe and *P. continua* Emery and previously was erroneously synonymised with the former (Kohout 1998). However, *P. inusitata* differs from *P. sericeopubescens* in several characters, including smaller size, irregularly reticulate-rugose sides of the mesosoma, distinctly shorter and



Figs 17-25. *Polyrhachis* spp. (17, 20-21) *P. continua* Emery (holotype): (17) head in full face view; (20) dorsal view; (21) lateral view. (18, 22-23) *P. inusitata* Kohout (holotype): (18) head in full face view; (22) dorsal view; (23) lateral view. (19, 24-25) *P. neuguinensis* sp. n. (holotype): (19) head in full face view; (24) dorsal view; (25) lateral view. Not to scale.

more abundant gastral pilosity and lateral petiolar teeth reduced to more or less distinct denticles or virtually obsolete. In contrast, the available syntype of *P. sericeopubescens* is larger (HL 2.62 in *sericeopubescens* versus 2.31-2.56 in *inuitata*), the lateral branches of mesosoma are distinctly longitudinally striate, the gastral pilosity is longer and more sparse and the lateral petiolar teeth are distinctly produced.

Polyrhachis inuitata differs from *P. continua* by its distinctly slender body, reticulate-rugose sculpturation and the abundant short hairs distributed over most of the body. In contrast, in *P. continua* the body is wider and relatively robust, the sculpturation on the head and mesosoma is more-or-less regularly longitudinally striate and the hairs are distinctly longer and much diluted.

Polyrhachis neuguinensis sp. n.

(Figs 19, 24-25)

Types. *Holotype* worker: PAPUA NEW GUINEA, West Sepik Prov., Pes Mission, c. 12 km WSW of Aitape, 03°11'S, 142°15'E, c. 50 m, 3.viii.1984, swampy lowland rf., ex nest in tree trunk crevice, R.J. Kohout acc. 84.201 (worker). *Paratypes*: data as for holotype (10 workers, alate queen). Holotype, paratype worker and queen in ANIC; 5 paratype workers in QMBA; 2 paratype workers each in BMNH and MCZC.

Additional material examined. PAPUA NEW GUINEA, West Sepik Prov., Pes Mission, c. 12 km WSW of Aitape, 03°11'S, 142°15'E, c. 50 m, 3.viii.1984, swampy lowland rf., strays on low vegetation (RJK accs 84.160) (w).

Description. Worker. Dimensions (holotype cited first): TL c. 10.43, 9.37-10.43; HL 2.56, 2.34-2.56; HW 2.00, 1.78-2.00; CI 78, 76-80; SL 3.33, 3.02-3.33; SI 166, 162-172; PW 1.68, 1.50-1.68; MTL 3.53, 3.22-3.53 (11 measured).

Anterior clypeal margin arcuate, medially obtusely truncate and shallowly emarginate. Clypeus with posteriorly raised median carina; clypeus in profile straight with shallow depression behind anterior margin, posteriorly rounding into shallow basal margin. Frontal triangle distinctly impressed. Frontal carinae with highly raised, laminate margins; central area narrow with indistinct frontal furrow. Sides of head in front of eyes virtually straight, weakly converging anteriorly; behind eyes sides produced into blunt carina extending towards rather prominent occipital corners. Eyes convex, moderately posteriorly protracted, in full face view exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum with long, slender, acute spines directed anterolaterally and curved slightly downwards, lateral edges of spines acute and continuous with weakly upturned pronotal margins. Promesonotal suture distinctly impressed laterally; mesonotal dorsum transverse with strongly raised, laminate, lateral margins converging into medially flat, posteriorly bowed, metanotal groove. Propodeal dorsum with lateral margins strongly raised anteriorly, virtually flat posteriorly and terminating in distinct, acute teeth with inner borders continuous medially for short distance and terminating in blunt, transverse carina that somewhat divides propodeal dorsum from declivity. Petiole scale-like, with dorsal margin armed with two slender, posteriorly curved, acute spines with inner margins forming 'U'-shaped petiolar dorsum; lateral margins of petiole below base of each spine with

short, distinct, acute tooth. Anterior face of first gastral segment flat, anterodorsal margin widely rounding onto dorsum.

Mandibles distinctly, longitudinally striate. Clypeus reticulate-punctate; rest of head and mesosoma, including sides, distinctly, mostly longitudinally striate; propodeal declivity and petiole, including spines, finely reticulate. Gaster finely shagreened.

Mandibular masticatory borders and outer margins with numerous, semierect, golden hairs. Anterior clypeal margin with several long, anteriorly directed setae medially and fringe of shorter setae laterally. Numerous short to medium length, erect to semierect hairs on clypeus, along frontal carinae and vertex, many hairs fringing lateral cephalic outline in full face view. Antennal scapes with numerous, semierect, short to medium length hairs along leading edge and several hairs along inferior edge. Mesosoma, except declivity, and legs, except dorsal surfaces of femora, with numerous short to medium length, erect hairs; petiole with numerous shorter hairs along lateral margins, including inner margins of spines. Gaster with numerous medium length, posteriorly inclined hairs, distinctly increasing in length towards gastral apex and over venter. Closely appressed, silvery white or greyish pubescence variously distributed over most body surfaces, somewhat shorter with distinctly reddish tint on gastral dorsum.

Colour. Black; mandibular masticatory borders lined reddish brown; antennae with funicular segments progressively lighter, yellowish brown, towards apices. Legs, including mid and hind coxae, medium reddish brown; front coxae and tarsi a shade darker. Gaster reddish brown.

Queen. Dimensions: TL c. 11.69; HL 2.62; HW 2.09; CI 80; SL 3.28; SI 157; PW 2.34; MTL 3.53 (1 measured).

Queen larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines distinctly shorter, broad-based. Mesoscutum only marginally wider than long; lateral margins strongly converging anteriorly into narrowly rounded anterior margin; median line distinct; parapsides virtually flat; mesoscutum in profile with relatively low, widely rounded anterior face and only slightly convex dorsum. Mesoscutellum only weakly convex, not distinctly elevated above dorsal plane of mesosoma. Propodeum convex in outline with lateral margins terminating in medially directed, short ridges; propodeal dorsum descending into weakly concave declivity in medially uninterrupted line. Petiole with dorsal spines distinctly shorter and dorsum between with minute intercalary denticle. Sculpturation, pilosity, pubescence and colour scheme very similar to worker.

Male and immature stages unknown.

Etymology. Named after the island of New Guinea.

Remarks. *Polyrhachis neuguinensis* is an easily recognised species featuring a rather slender mesosomal dorsum with distinctly upturned lateral margins and relatively long pronotal spines. It also features acute, distinctly upturned, propodeal teeth and a transverse carina that completely divides the propodeal dorsum from the declivity. The type series specimens were collected from a nest in a tree crevice in swampy lowland rainforest.

Polyrhachis planoculata sp. n.

(Figs 26, 29-30)

Type. Holotype worker: PAPUA NEW GUINEA, Northern Prov., Maru Riv. (= ? Maiiu Riv.), 32 km S of Wanigela, for. clearing, vii.1972, R.J. Pullen (w), in ANIC.

Description. Worker. Dimensions: TL c. 11.14; HL 2.81; HW 2.09; CI 74; SL 3.78; SI 181; PW 1.81; MTL 3.93 (1 measured).

Anterior clypeal margin arcuate, medially obtusely truncate. Clypeus with blunt, poorly indicated median carina; clypeus virtually straight in profile, posteriorly rounding into well impressed basal margin. Frontal triangle distinct. Frontal carinae with highly raised, laminate margins; central area narrow with rather short, but distinct, frontal furrow. Sides of head in front of eyes virtually straight, weakly converging anteriorly; behind eyes, sides produced into blunt carina extending towards occipital corners. Eyes rather flat, notably when viewed from behind, in full face view not reaching lateral cephalic outline. Ocelli lacking. Pronotal dorsum armed with only moderately long, anterolaterally directed, acute spines; lateral margins behind bases of spines rather flat, only weakly converging towards promesonotal suture. Mesonotal dorsum transverse with almost vertically raised anterior corners of lateral margins; metanotal groove flat. Propodeal dorsum with lateral margins only weakly raised anteriorly, converging posteriorly and terminating in blunt tuberculae; dorsum descending into declivity in rather smooth, evenly rounded curve. Petiole scale-like, dorsal margin armed with two slender, somewhat posteriorly curved, weakly divergent, acute spines with inner margins forming 'U'-shaped petiolar dorsum; lateral margins of petiole below base of each spine with small, acute tooth. Anterior face of first gastral segment flat, with anterodorsal margin widely rounding onto dorsum.

Mandibles distinctly, longitudinally striate. Clypeus and front of head reticulate-punctate with pattern on sides and vertex somewhat longitudinally directed. Dorsum of mesosoma distinctly, mostly longitudinally reticulate-punctate; sides of mesosoma finely wrinkled; propodeal declivity and petiole, including spines, finely reticulate. Gaster finely shagreened.

Mandibular masticatory borders and outer margins with numerous, semierect, relatively long, golden hairs. Anterior clypeal margin with several long, anteriorly directed setae medially and fringe of shorter setae laterally. Numerous short to medium length, semierect hairs on clypeus, along frontal carinae and vertex; many shorter hairs fringing lateral cephalic outline in full face view. Antennal scapes with several, semierect, rather short hairs along leading edge. Dorsa of pronotum and mesonotum with very few, relatively short, semierect hairs; no hairs on propodeal dorsum and petiole. Several short, semierect hairs along ventral surfaces of femora and on tibiae. Petiole with numerous shorter hairs along lateral margins, including inner margins of spines. Gaster with numerous short or medium length, posteriorly inclined hairs, distinctly increasing in length towards gastral apex and over venter. Closely appressed, very short, silvery white or greyish pubescence variously over most body surfaces, with somewhat reddish tint on dorsum of gaster.

Colour. Black; mandibular masticatory borders lined reddish brown; antennae with funicular segments progressively lighter, yellowish brown

towards apices. Legs dark reddish brown, tarsi a shade darker. Gastral venter and apex reddish brown.



Figs 26-34. *Polyrhachis* spp. (26, 29-30) *P. planocolata* sp. n. (holotype): (26) head in full face view; (29) dorsal view; (30) lateral view. (27, 31-32) *P. procera* Emery (syntype): (27) head in full face view; (31) dorsal view; (32) lateral view. (28, 33-34) *P. pulleni* sp. n. (holotype): (28) head in full face view; (33) dorsal view; (34) lateral view. Not to scale.

Sexuals and immature stages unknown.

Etymology. Name derived from the combination of Latin words *planus*, meaning flat, and *oculus*, meaning eye, for its rather peculiar flat eyes.

Remarks. *Polyrhachis planocolata* is the only known species of this group with the eyes not reaching the lateral cephalic outline in full face view. The flatness of the eyes is particularly evident when the head is viewed from behind (Fig. 29).

***Polyrhachis procera* Emery, 1897**

(Figs 27, 31-32)

Polyrhachis continua var. *procera* Emery, 1897: 581. Syntype workers, queens. Type locality: NEW GUINEA, Haveri (L. Loria), MSNG (examined).

Polyrhachis procera Emery; Kohout, 1998: 519. Raised to species.

Additional material examined. INDONESIA, WEST IRIAN: Star Mts., Bivak 36, 1220 m, 29.vii.1959 (Neth. New Guinea Exp.) (w); ditto, Sibil Valley, 05°00'S, 141°00'E, 1260 m, 2.v.1959, on light (Neth. New Guinea Exp.) (♀); PAPUA NEW GUINEA: Wau Ecology Stn., 07°20'S, 146°43'E, 27.v.-4.vi.1987 (P.J. & J.O. Schmidt) (w); Tatupiti nr Tapini, 08°21'S, 146°59'E, 1200 m, viii.1962, rf. (R.W. Taylor acc. 2293) (w).

Worker. Dimensions (syntype cited first): TL c. 12.40, 11.89-12.85; HL 2.90, 2.87-3.06; HW 1.93, 1.93-2.09; CI 66, 66-69; SL 4.28, 4.18-4.54; SI 222, 216-222; PW 1.86, 1.76-1.91; MTL 4.48, 4.43-4.79 (1+3 measured).

Queen. Dimensions: TL c. 12.70; HL 2.93; HW 2.18; CI 74; SL 3.93; SI 180; PW 2.62; MTL 3.88 (1 measured).

Besides characters associated with full sexuality and the shorter pronotal and petiolar spines, the single alate queen resembles the workers very closely. The pilosity is somewhat denser, notably along the leading edge of the antennal scapes and the mesosomal dorsum.

Male and immature stages unknown.

Remarks. Emery (1897: 582) separated *P. procera* from *P. continua* by its larger size and more pronounced striation of the head and thorax ('... sono più grandi e con striatura del capo e del torace più marcata'). However, direct comparison of the syntypes of both species has revealed differences in a number of other characters. In *P. procera* the clypeus in profile is gently sinuate, with the anterior margin vaguely obtuse medially (entire in modern specimens). In contrast, the clypeus in *P. continua* is almost straight in profile, with only a shallow depression anteriorly and the anterior margin is distinctly truncate medially. The pronotal spines in *P. procera* are relatively long and slender and the lateral margins of mesonotal dorsum virtually flat and converge anteriorly. In *P. continua* the pronotal spines are distinctly shorter and the lateral margins of mesonotal dorsum are raised and converge

posteriorly. Examination of the types and other available specimens clearly demonstrates *P. procera* to be a distinct species from *P. continua* and supports the earlier action of raising it to specific status (Kohout 1998).

***Polyrhachis pulleni* sp. n.**

(Figs 28, 33-34)

Types. *Holotype* worker: PAPUA NEW GUINEA, Milne Bay Distr., 20 km W of Rabaraba, c. 610 m, viii.1969, R.J. Pullen. *Paratype*: data as for holotype (6 workers). Holotype and 3 paratypes in ANIC; 1 paratype each in BMNH, MCZC and QMBA.

Description. Worker. Dimensions (holotype cited first): TL c. 12.40, 12.10-12.85; HL 3.06, 2.93-3.09; HW 2.21, 2.12-2.28; CI 72, 71-75; SL 4.08, 3.98-4.13; SI 185, 179-188; PW 2.12, 2.03-2.15; MTL 4.48, 4.33-4.54 (7 measured).

Anterior clypeal margin arcuate, shallowly truncate. Clypeus with poorly distinct median carina, sinuate in profile, with shallow basal margin. Frontal triangle indistinct. Frontal carinae sinuate with strongly raised margins; central area relatively narrow with weakly impressed frontal furrow. Sides of head in front of eyes almost straight before rounding into mandibular bases; behind eyes, sides produced into blunt carina extending towards occipital corners. Eyes convex; in full face view clearly exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum with relatively long, broad-based, anterolaterally directed, acute spines; lateral edges of spines acute, terminating posteriorly in more-or-less distinct notches before merging with distinctly upturned, subparallel pronotal margins. Promesonotal suture distinctly impressed laterally, rather flat medially; mesonotal dorsum transverse with rather highly and widely raised lateral margins, weakly converging into medially flat metanotal groove. Propodeum with lateral margins raised anteriorly, flat posteriorly and terminating in blunt tuberculae; propodeal dorsum descending into declivity in weakly curved, medially uninterrupted line.

Petiole scale-like with anterior and posterior faces almost flat, strongly converging dorsally; dorsal margin armed with two slender, posteriorly curved, acute spines with inner margins forming 'U'-shaped petiolar dorsum; lateral margin of petiole below base of each spine with short, distinct, acute tooth. Anterior face of first gastral segment flat at base, narrowly rounding onto dorsum.

Mandibles finely, longitudinally striate with numerous piliferous pits towards masticatory borders. Clypeus reticulate-punctate; sculpturation obliquely striate on sides and mostly longitudinally striate on vertex and between frontal carinae and eyes. Pronotal dorsum and bases of spines finely reticulate-punctate with sculpture somewhat organised into indistinct striae towards promesonotal suture. Mesonotal and propodeal dorsa rather regularly longitudinally striate, with propodeal declivity finely reticulate-punctate. Petiole reticulate-punctate, with spines towards tips almost smooth. Gaster shagreened.

Mandibles along outer margin and towards masticatory borders with numerous suberect, relatively long, golden hairs. Anterior clypeal margin with a few, rather long setae medially and several shorter setae fringing margin laterally. Numerous, semierect or erect, medium length or relatively long hairs on clypeus and front of

head; numerous hairs fringing outline of head in full face view; antennal scapes with numerous, relatively long hairs along leading edge and somewhat fewer hairs along inferior edge. Mesosoma and legs with numerous, medium length hairs; petiole with numerous hairs around base and along lateral margins and inner margins of spines. Gaster with numerous, posteriorly directed, relatively long hairs with longer than half greatest diameter of eyes. Closely appressed, rather diluted, silvery pubescence over most body surfaces, more dense and distinctly reddish on gastral dorsum.

Colour. Black; wide band along masticatory borders and apical funicular segments reddish brown. Legs medium to dark reddish brown with trochanters and apical tarsal segments a shade lighter. Gaster very dark brown dorsally, with base, venter and apex reddish brown.

Sexuals and immature stages unknown.

Etymology. Named after the collector, R.J. Pullen, who collected many species of ants during his field work throughout Papua New Guinea.

Remarks. With its larger size (HL >2.90) and distinctly upturned pronotal and mesonotal lateral margins, *P. pulleni* somewhat resembles *P. robusta*. Both feature distinct propodeal teeth and a transverse carina dividing the propodeal dorsum from the declivity, similar to above described *P. neuguinensis*. However, in the latter species the propodeal teeth are acute and distinctly upturned and the carina completely divides the dorsum from declivity. In both the other species the carina is incomplete, with the propodeal dorsum descending into the declivity in weakly curved, medially uninterrupted line. The pronotal spines in *P. pulleni* are relatively shorter, broad-based and only about 2x as long as their basal width, while in *P. robusta* they are distinctly longer, about 3x as long as their basal width. Also, the antennal scapes in the former are generally shorter (SI 179-188 in *P. pulleni* versus 185-199 in *P. robusta*).

Polyrhachis robusta sp. n.

(Figs 35, 38-39)

Types. *Holotype* worker: PAPUA NEW GUINEA, N. Distr. Managalase Area, 2500-3000', viii.1965, R. Pullen. *Paratypes*: data as for holotype (2 workers); Northern Prov., Owen Stanley Ra., nr Mamba Pltn, c. 7 km WNW of Kokoda, 08°51'S, 147°41'E, 500 m, 31.viii-1.ix.1984, stray on felled trees (R.J. Kohout acc. 84.403) (worker); ditto, ex rotten log (RJK acc. 84.391) (♀). *Holotype* worker in ANIC; 1 paratype worker and paratype queen in QMBA; 1 paratype worker each in BMNH and MCZC.

Description. Worker. Dimensions (holotype cited first): TL c. 12.90, 12.65-13.00; HL 3.12, 3.03-3.12; HW 2.28, 2.15-2.28; CI 73, 71-74; SL 4.38, 4.28-4.38; SI 192; 185-199; PW 2.15, 2.03-2.18; MTL 4.54, 4.43-4.59 (1+3 measured).

Anterior clypeal margin arcuate, shallowly truncate. Clypeus without distinct median carina, weakly sinuate in profile, with shallow basal margin. Frontal triangle distinct.



Figs 35-43. *Polyrhachis* spp. (35, 38-39) *P. robusta* sp. n. (holotype): (35) head in full face view; (38) dorsal view; (39) lateral view. (36, 40-41) *P. sericeopubescens* Donisthorpe (syntype): (36) head in full face view; (40) dorsal view; (41) lateral view. (37, 42-43) *P. simpla* Emery (syntype): (37) head in full face view; (42) dorsal view; (43) lateral view. Not to scale.

Frontal carinae sinuate with strongly raised margins; central area relatively narrow with weakly impressed frontal furrow. Sides of head in front of eyes weakly diverging anteriorly before rounding into mandibular bases; behind eyes, sides produced into

blunt carina extending towards rather prominent occipital corners. Eyes convex; in full face view clearly exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum with long, slender, anterolaterally directed, acute spines; bases of spines somewhat dorsomedially flattened with lateral edges acute and continuous with distinctly upturned pronotal margins. Promesonotal suture distinctly impressed laterally, rather flat medially; mesonotal dorsum transverse with distinctly raised lateral margins, converging into medially flat metanotal groove. Propodeum with lateral margins raised anteriorly, flat posteriorly and terminating in distinct, short, transverse ridges; propodeal dorsum descending into declivity in weakly curved, medially uninterrupted line. Petiole scale-like with anterior face flat, posterior face weakly convex, strongly converging dorsally; dorsal margin armed with two slender, posteriorly curved, acute spines with inner margins forming widely open 'U'-shaped petiolar dorsum; lateral margin of petiole below base of each spine with short, distinct, acute tooth. Anterior face of first gastral segment flat at base, rounding anterodorsally onto dorsum.

Mandibles finely, longitudinally striate at bases; striae less regular and with numerous piliferous pits towards masticatory borders. Clypeus and vertex along occipital margin and towards occipital corners reticulate-punctate; sculpturation obliquely striate on sides and longitudinally striate from vertex towards central area and between frontal carinae and eyes. Pronotal dorsum and bases of spines finely reticulate-punctate with sculpture more regularly striate towards promesonotal suture; mesonotum rather regularly longitudinally striate, with striae continuous medially onto basal portion of propodeum; striae much finer and somewhat medially 'U'-shaped posteriorly. Propodeal declivity and petiole very finely reticulate-punctate, spines towards tips almost smooth. Gaster shagreened.

Mandibles along outer margin and towards masticatory borders with numerous erect and suberect, relatively long, golden hairs with somewhat reddish tint. A few, rather long setae arising medially from anterior clypeal margin with shorter setae fringing margin laterally. Numerous, semierect or erect, medium length or relatively long hairs of same colour rather abundant on clypeus and rest of head; numerous hairs fringing outline of head in full face view; antennal scapes with numerous, relatively long hairs along leading edge and somewhat fewer hairs along inferior edge. Mesosoma and legs with numerous, medium length hairs; petiole with several hairs around base and a few hairs along lateral margins and spines. Gaster with numerous, posteriorly directed, relatively long hairs, some as long as greatest diameter of eyes. Closely appressed, rather diluted, silvery pubescence over most body surfaces, more dense and distinctly reddish on gastral dorsum.

Colour. Black; mandibular teeth and apical funicular segments reddish brown. Legs black or very dark reddish brown with trochanters and apical tarsal segments medium reddish brown.

Queen. Dimensions: TL c. 13.51, HL 3.18; HW 2.34; CI 73; SL 4.18; SI 179; PW 2.72; MTL 4.33 (1 measured).

Queen larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines shorter. Mesoscutum only marginally wider than long; lateral margins strongly converging anteriorly into narrowly rounded anterior margin; median line distinct; parapsides

virtually flat; mesoscutum in profile with widely rounded anterior face and virtually flat dorsum. Mesoscutellum only weakly convex, not elevated above dorsal plane of mesosoma. Propodeum almost flat in outline, with lateral margins weakly raised anteriorly and terminating in short ridges that extend medially as a blunt, transverse border, partly dividing propodeal dorsum from declivity. Petiole with dorsal spines distinctly shorter. Sculpturation, pilosity, pubescence and colour very similar to worker.

Male and immature stages unknown.

Etymology. The name alludes to its rather robust body in comparison with the closely similar *P. continua*.

Remarks. *Polyrhachis robusta* bears a close similarity to *P. pulleni*, with differences between them discussed above under the latter species. *Polyrhachis robusta* also somewhat resembles *P. continua* with which it is sympatric at both localities it has been collected. However, they are easily separated with *P. continua* being distinctly more slender and lacking the hairs on the antennal scapes and petiolar node that are rather abundant in *P. robusta*. Also, the petiolar spines in *P. continua* are virtually parallel, while they are distinctly divergent in *P. robusta*.

Polyrhachis sericeopubescens Donisthorpe, 1941

(Figs 36, 40-41)

Polyrhachis (Myrma) sericeopubescens Donisthorpe, 1941: 61. Syntype worker, queen. Original localities: NEW GUINEA: Japen I., Mt Baduri, 1000ft, viii.1938 (for w); Mt Eiori, 2000ft, x.1938 (for ♀) (both L.E. Cheesman), BMNH (examined).

Polyrhachis sericeopubescens Donisthorpe; Kohout, 1998: 520. Senior synonym of *P. inusitata* Kohout. Erroneous synonymy.

Polyrhachis conops var. *cuspidata* Stitz, 1911: 376. Syntype workers. Type locality: NEW GUINEA (Schultze), MNHU (examined). Junior primary homonym of *Polyrhachis cuspidatus* Fr. Smith, 1857: 63. **Syn. n.**

Polyrhachis conops cuspidata Stitz; Kohout, 1998: 520.

Additional material examined. PAPUA NEW GUINEA: West Sepik Prov., Pes Mission, c. 12 km WSW of Aitape, 03°11'S, 142°15'E, <50 m, 31.vii-3.viii.1984 (RJK acc. 84.206) (w).

Dimensions of *sericeopubescens* syntypes (queen cited last): TL c. 10.73, 13.36; HL 2.62, 3.03; HW 2.00, 2.15; CI 76, 71; SL 3.68, 4.13; SI 184, 192; PW 1.75, 2.81; MTL 3.68, 4.28 (1+1 measured).

Remarks. Donisthorpe (1941), in his original description, noted that 'This distinct species in the *striata* group does not agree with any of the descriptions of other species of *Myrma* from these regions'. However, direct comparison of *P. sericeopubescens* syntype with that of *P. conops cuspidata* Stitz revealed they were virtually identical and undoubtedly conspecific. In fact, *P. sericeopubescens* is also very similar to *P. spinifera* and differs from

that species mainly by its smaller size (HL 2.63 in *sericeopubescens* versus 2.81-2.96 in *spinifera*) and in having the pronotal dorsum distinctly narrower (only 1.13x wider than long in *sericeopubescens* versus 1.5x wider than long in *spinifera*). *Polyrhachis sericeopubescens* has also been considered a senior synonym of *P. imusitata* (Kohout 1998); however, recent direct comparison of the types of both species and examination of several more recently collected specimens has confirmed they represent separate taxa (Kohout 2012).

***Polyrhachis simpla* Santschi, 1928**

(Figs 37, 42-43)

Polyrhachis (Myrma) conops subsp. *simplex* Karavaiev, 1927: 45. Syntype workers, queens, males. Type locality: INDONESIA, Aru Is: Wammar (V. Karavaiev), IZAS, QMBA (examined). Junior primary homonym of *P. simplex* Mayr, 1862: 682.

Polyrhachis (Myrma) conops st. *simpla* Santschi, 1928: 139. Replacement name.

Polyrhachis simpla Santschi; Kohout, 1998: 520. Raised to species.

Additional material examined. PAPUA NEW GUINEA: West Sepik Prov., Pes Mission, c. 12 km WSW of Aitape, 03°11'S, 142°15'E, c. 50 m, 3.viii.1984, swampy lowland rf., ex nest in tree trunk crevice (RJK accs 84.184, 214) (w).

Dimensions of *conops simpla* syntypes: TL c. 9.78-11.54; HL 2.59-2.77; HW 1.87-2.02; CI 71- 73; SL 3.63-3.88; SI 192-196; PW 1.96-2.17; MTL 3.83-4.03 (4 measured).

Sexuals apparently present in Karavaiev collection in Kiev, Ukraine (IZAS).

Remarks. *Polyrhachis simpla* is very similar to *P. spinifera* and *P. sericeopubescens*, however, it differs from both in having the lateral margins of the pronotal dorsum virtually flat, while they are distinctly upturned in the other species. Also, the lateral margins of mesonotum distinctly converge posteriorly in *P. simpla*, while they are subparallel in both *P. spinifera* and *P. sericeopubescens*.

***Polyrhachis spinifera* Stitz, 1911**

(Figs 44-45, 47-48)

Polyrhachis conops var. *spinifera* Stitz, 1911: 376. Syntype workers. Type locality: NEW GUINEA, Tana (Moszkowski), MNHU, MHNG (examined).

Polyrhachis continua var. *hirsutula* Emery, 1911: 256. Syntype workers. Type locality: NEW GUINEA, R. Digul (Digool on locality label) (= Digoel River), MSNG (examined). Synonymy by Kohout, 1998: 520.

Polyrhachis spinifera Stitz; Kohout, 1998: 520. Raised to species.

Additional material examined. PAPUA NEW GUINEA: Murua Riv. nr Kerema, 07°50'S, 145°52'E, 10 m, 20.xii.1964 (Malaise trap) (J. Sedláček) (w); West Sepik Prov., Pes Mission, c. 12 km WSW of Aitape, 03°11'S, 142°15'E, <50m, 31.vii-3.viii.1984, ex nest in dry bamboo internode (RJK acc. 84.184, w, ♀); ditto, strays on

foliage and vegetation (RJK acc. 84.206) (w, ♀); ditto, ex nest in rotting tree branch on ground (RJK acc. 84.208) (w, ♀); Central Prov.: 5 km NW of Brown Riv. For. Stn, 09°10'S, 147°12'E, <50 m, 6.ix.1984, ex nest in rotting log (RJK acc. 84.442) (w, ♀); Astrolabe Ra., Musgrove Riv. Valley, c. 350m, vi.1962, rf. (R.W. Taylor acc. 1844) (w).



Figs 44-50. *Polyrhachis* spp. (44-45, 47-48): *P. spinifera* Stütz (syntype); (44) head in full face view; (45) petiole in frontal view; (47) dorsal view; (48) lateral view. (46, 49-50) *P. tapini* sp. n. (holotype); (46) head in full face view; (49) dorsal view; (50) lateral view. Not to scale.

Worker. Dimensions of *conops spinifera* and *continua hirsutula* syntypes: TL c. 11.44-12.20; HL 2.81-2.96; HW 2.04-2.15; CI 72-75; SL 3.88-3.96; SI 183-194; PW 1.96-2.31; MTL 3.93-4.03 (3 measured).

Queen (not previously described). Dimensions: TL c. 12.50-12.60; HL 2.84-2.93; HW 2.06-2.15; CI 72-73; SL 3.78-3.83; SI 178-183; PW 2.53-2.62; MTL 3.68-3.83 (2 measured).

Larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines shorter. Mesoscutum only marginally wider than long; lateral margins strongly converging anteriorly into narrowly rounded anterior margin; median line distinct; parapsides virtually flat, only weakly raised posteriorly; mesoscutum in profile with widely rounded anterior face and weakly convex, posteriorly almost flat, dorsum. Mesoscutellum only weakly convex, marginally elevated above dorsal plane of mesosoma. Propodeum with lateral margins distinctly rounded anteriorly and weakly raised towards middle of their length; margins terminating posteriorly in short ridges that extend medially for a short distance with dorsum between them descending into declivity in medially uninterrupted line. Petiole with dorsal spines distinctly shorter. Sculpturation, pilosity, pubescence and colour scheme virtually identical to worker.

Male and immature stages unknown.

Remarks. As mentioned earlier (Kohout 1998: 520), direct comparison of the syntypes of *P. conops spinifera* and *P. continua hirsutula* has shown them to be very similar and undoubtedly representing a single species. They differ from *P. conops* and *P. continua* by a distinctly wider pronotal dorsum and rather abundant semierect to erect pilosity which is almost completely lacking in the other two species. *Polyrhachis conops spinifera* and *P. continua hirsutula* were described in the same year, however, Stitz's description of *spinifera* was published on 30.x.1911, while Emery's *hirsutula* appeared two months later on 31.xii.1911 (Bolton 1995).

Polyrhachis tapini sp. n.

(Figs 46, 49-50)

Types. *Holotype* worker: PAPUA NEW GUINEA, Central Distr., Tapini, 1000-1200 m, rf., viii.1962, ex nest in soil, R.W. Taylor acc. 2200. *Paratypes:* data as for holotype (2 workers, 2 queens); NEW GUINEA, Morobe Distr., Herzog Mts., Wagau. C. 4,000 ft, 4-17.i.1965; M.E. Bacchus, B.M. 1965-120; Stn. No. 137. *Holotype*, 1 paratype worker and 1 paratype queen in ANIC; 1 paratype worker and paratype queen in QMBA; 1 paratype worker in BMNH.

Description. Worker. Dimensions (holotype cited first): TL c. 11.39, 11.24-11.89; HL 2.81, 2.81-2.90; HW 2.06, 1.96-2.15; CI 73, 70-74; SL 4.03, 3.93-4.08; SI 196, 190-200; PW 1.90, 1.87-1.93; MTL 4.13, 4.03-4.33 (4 measured).

Anterior clypeal margin arcuate, medially truncate. Clypeus without distinct median carina, very weakly sinuate in profile, with almost flat basal margin. Frontal triangle distinct. Frontal carinae sinuate with strongly raised margins; central area relatively narrow with weakly impressed frontal furrow. Sides of head in front of eyes subparallel, before rounding into mandibular bases; behind eyes sides with distinct postocular carina extending towards occipital corners. Eyes convex; in full face view clearly exceeding lateral cephalic outline. Ocelli lacking. Pronotal dorsum with relatively long, slender, anterolaterally directed, acute spines; lateral edges of spines acute, merging posteriorly with narrowly upturned, smoothly rounded pronotal margins. Promesonotal suture distinctly impressed laterally, rather flat medially;

mesonotal dorsum transverse with weakly sinuate, anteriorly raised lateral margins, posteriorly rounding into medially flat metanotal groove. Propodeum with lateral margins only weakly raised anteriorly, flat for most of their length and terminating in poorly raised, blunt tuberculae; propodeal dorsum descending into declivity in weakly curved, medially uninterrupted line. Petiole scale-like, distinctly slender in lateral view, armed with two rather long and slender, posteriorly curved, acute spines with inner margins forming 'U'-shaped petiolar dorsum; lateral margin of petiole below base of each spine with very short, acute tooth. Anterior face of first gastral segment flat at base, widely rounding onto dorsum.

Mandibles finely, longitudinally striate with numerous piliferous pits towards masticatory borders. Clypeus reticulate-punctate; sculpturation obliquely striate on sides and mostly longitudinally striate on vertex and between frontal carinae and eyes. Pronotal dorsum finely, longitudinally striate at base, with striae diverging anteriorly towards bases of spines. Mesonotal and propodeal dorsa finely, rather regularly, longitudinally striate, with propodeal declivity finely reticulate-punctate. Petiole reticulate-punctate, with spines towards tips almost smooth. Gaster shagreened.

Mandibles along outer margin and towards masticatory borders with numerous suberect, relatively long, golden hairs. Anterior clypeal margin with a few, rather long setae medially and several shorter setae fringing margin laterally. Numerous, semierect or erect, relatively long hairs rather abundant on clypeus and front of head; numerous somewhat shorter hairs fringing outline of head in full face view; antennal scapes with numerous, relatively long hairs along leading edge; hairs lacking on dorsum of mesosoma and petiole. Legs, including coxae, with numerous, medium length hairs along ventral margin. Gaster with numerous, medium length, posteriorly directed hairs. Closely appressed, relatively sparse, silvery pubescence over most body surfaces, except dorsum of mesosoma and petiole; pubescence denser with distinct reddish tint on gastral dorsum.

Colour. Black; wide band along masticatory borders and apical funicular segments reddish brown. Legs medium to dark reddish brown with trochanters and apical tarsal segments a shade lighter. Gaster black or very dark brown dorsally, apex reddish brown.

Queen. Dimensions: TL c. 12.10-13.15; HL 2.93-2.99; HW 2.18; CI 73-74; SL 4.08-4.13; SI 187-189; PW 2.46-2.59; MTL 4.03-4.08 (2 measured).

Queen marginally larger than worker with usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. Pronotal spines shorter. Mesoscutum only marginally wider than long; lateral margins converging into moderately rounded anterior margin; median line distinct; parapsides virtually flat; mesoscutum in profile with widely rounded anterior face and virtually flat dorsum. Mesoscutellum weakly convex, marginally elevated above dorsal plane of mesosoma. Propodeum with lateral margins weakly raised anteriorly, terminating posteriorly in short ridges; propodeal dorsum in lateral view descending into declivity in medially unbroken curve. Petiole with dorsal spines distinctly shorter. Sculpturation on mesoscutum with longitudinal striae curving anteriorly and medially towards median line, with those on mesoscutellum weakly diverging posteriorly. Pilosity and pubescence similar to that in worker, except numerous erect, medium length hairs

present on dorsum of mesosoma that are completely absent in worker. Colour scheme very similar to worker.

Male. A single callow male present in the ANIC spirit collection (Bottle no. 39/4).

Immature stages unknown.

Etymology. Named after the type locality, Tapini village, nestled along the southern slopes of the Owen Stanley Range in Papua.

Remarks. *Polyrhachis tapini* is a very characteristic and easily recognisable species. It features virtually flat pronotal and mesonotal dorsa with lateral margins that are rather abruptly and very narrowly (only about 0.1 mm) upturned. The pronotal spines are long and slender with their tips weakly downturned. The petiole has long and divergent dorsal spines and lateral spines reduced to mere angles. The dorsa of the mesosoma and petiole are completely hairless and with only very sparsely distributed, appressed pubescence.

Concluding note

This paper is part of a wider study of the systematics and biology of *Polyrhachis* ants. For a review of their nesting habits and socioecology see Robson and Kohout (2007).

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